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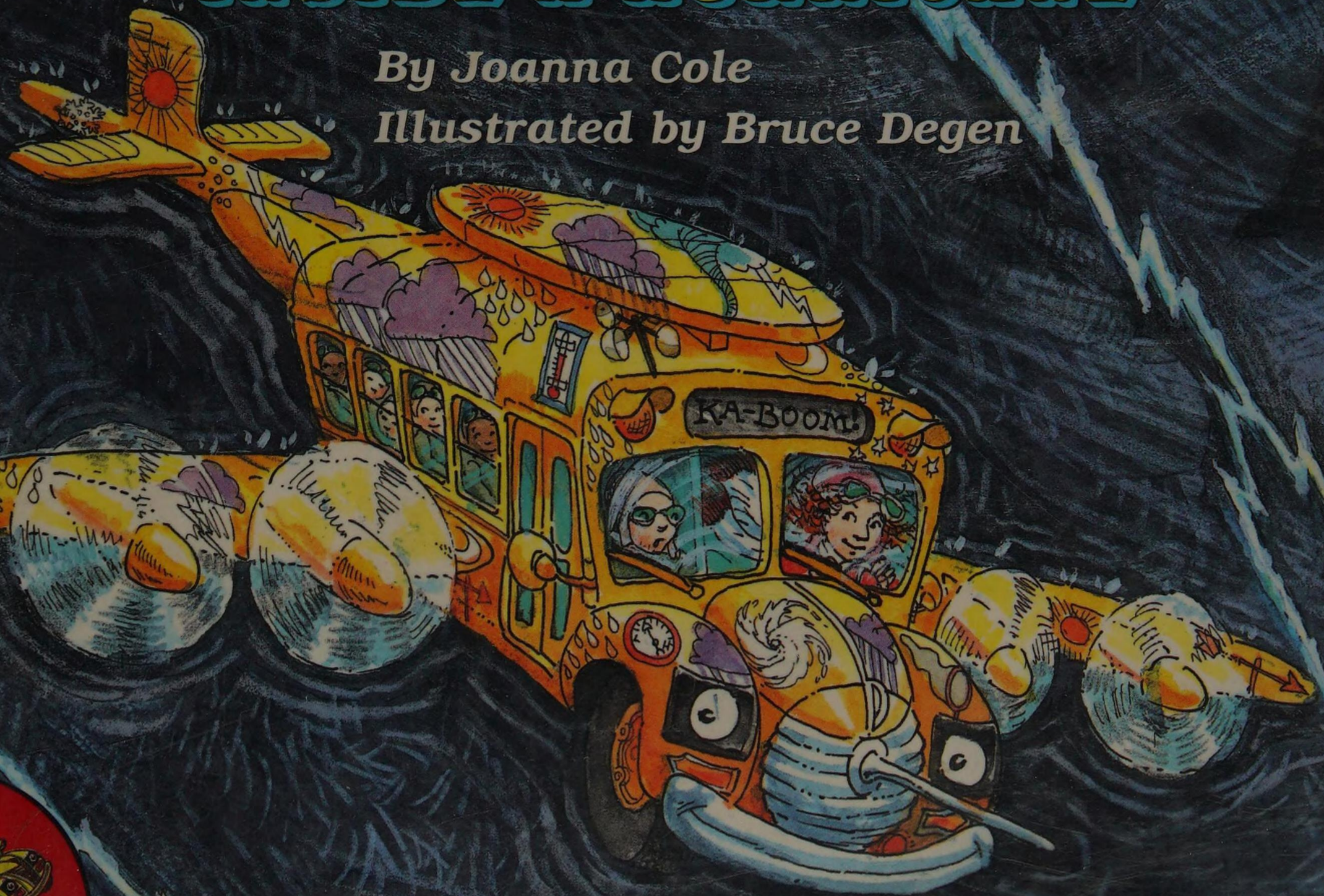
The Magic School Bus

INSIDE A HURRICANE

By Joanna Cole
Illustrated by Bruce Degen



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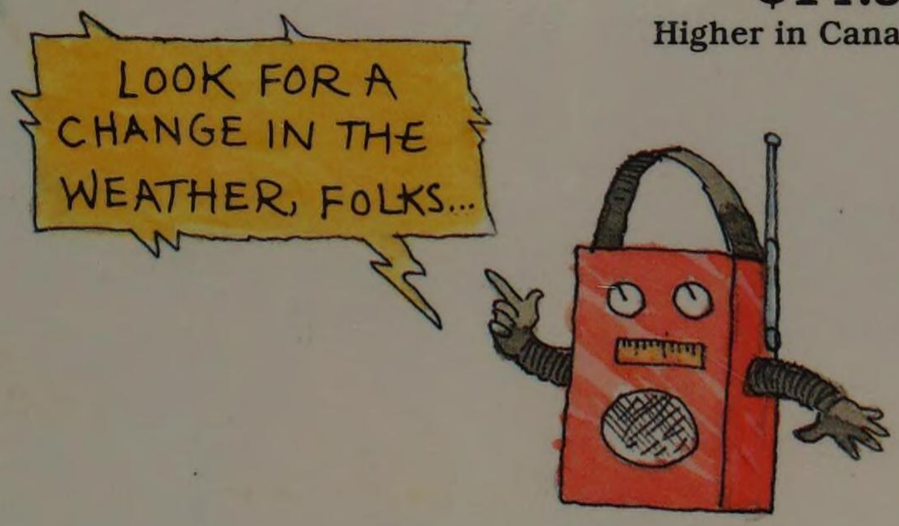

A storm system is brewing over a tropical ocean . . . and a strange yellow object is caught in the whirlwind. It's a balloon. It's a plane. It's the Magic School Bus! And so instead of visiting the weather station, Ms. Frizzle's class experiences a hurricane firsthand, from air, sea, and land.

In the latest addition to this best-selling science series, readers learn how changes in the air make different kinds of weather. Wind, rain, thunder, and lightning will take on new meaning when you're inside a hurricane!

Reinforced binding
Jacket art © 1995 by Bruce Degen

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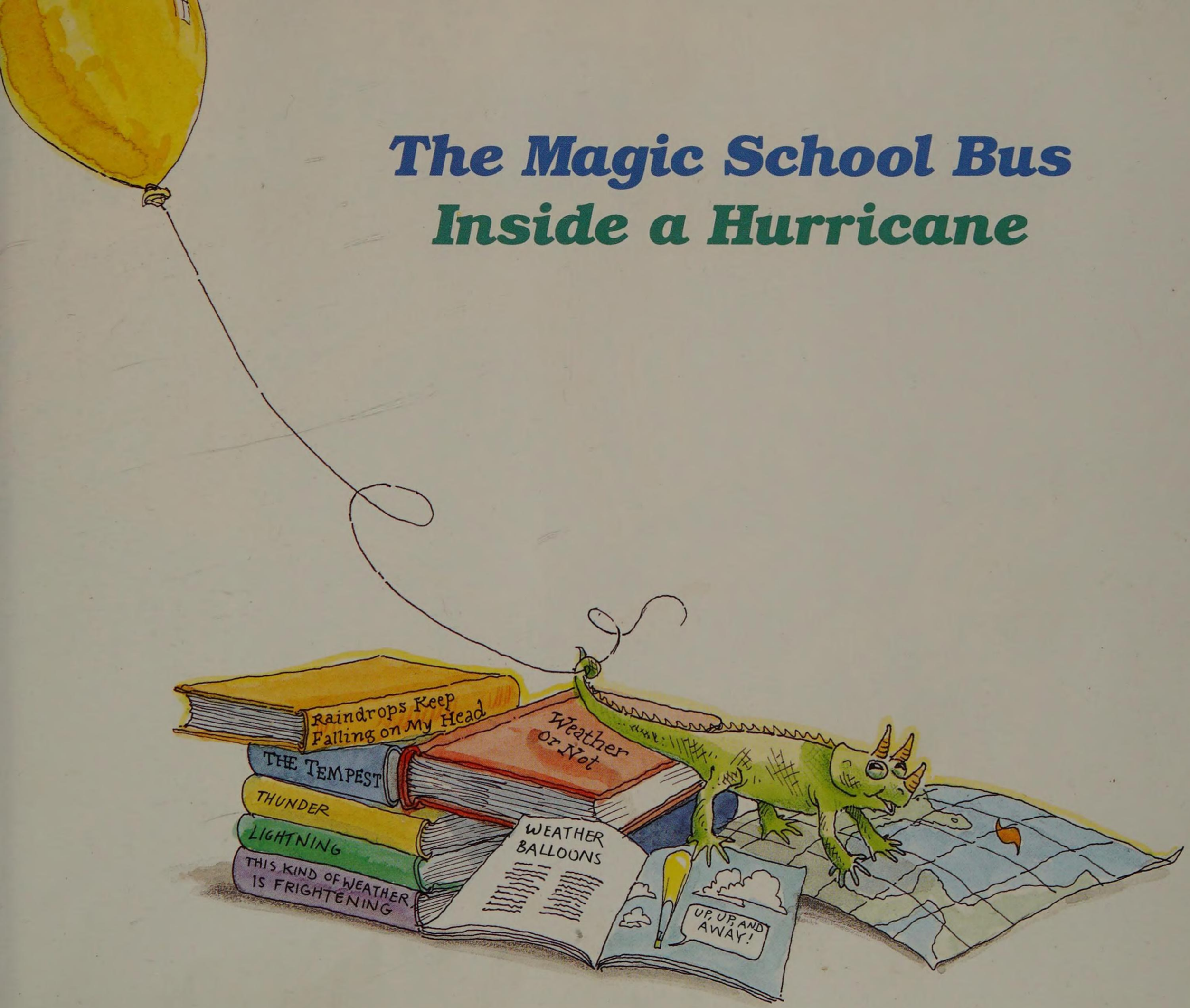

THUNDERCLOUDS

The Magic School Bus Inside a Hurricane

By Joanna Cole
Illustrated by Bruce Degen

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SCHOLASTIC HARDCOVER

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The author and illustrator wish to thank Dr. Robert C. Sheets, Director of the National Hurricane Center; and Dr. Daniel Leathers, Delaware State Climatologist, University of Delaware for their assistance in preparing this book.

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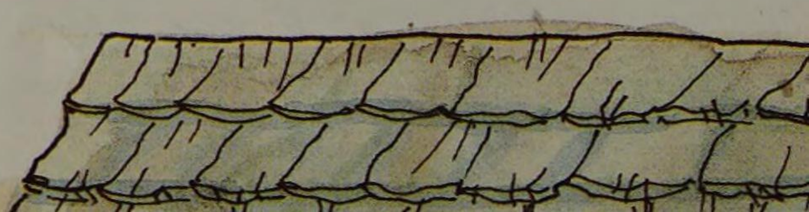


She's the Magic School Bus Editor
And we'd like herewith to credit her:
To Phoebe Yeh
Our Sunny Day.

J.C. & B.D.

Have you heard about our teacher, Ms. Frizzle?
Her clothes are wild, her school bus is wacky,
and her class trips are weird.
Whenever we study something in her class,
we get into it in a *really* big way.

CLASS, TO UNDERSTAND WEATHER, WE HAVE TO KNOW ABOUT THE SUN.

IT'S A HOT TOPIC!

The Sun Heats Our Earth

OUR TEMPERATURE RECORD
by Dorothy Ann & Tim

	Morning	Afternoon
MONDAY	65° F	73° F
TUESDAY	71°F	80°F
WEDNESDAY	69°F	76°F
URSDAY	70°F	75°F

Q: WHY IS THE TEMPERATURE USUALLY HIGHER IN THE AFTERNOON?

A: BECAUSE BY AFTERNOON, THE SUN HAS BEEN WARMING THINGS UP ALL DAY.

PUSH

We were learning about weather.
Absolutely everything in our room
was about rain or snow or sun or wind.
Every kid in the class
was doing a weather project.
We were even listening to
weather reports on Ms. Frizzle's radio.

TODAY'S MATH

SPELLING WORDS

Sun	Wind
rain	Snow
drizzle	Sleet
hail	hurricane
don't	forget
your	umbrella

AT MY OLD SCHOOL WE DIDN'T HAVE ALL THESE PROJECTS!

AT MY OLD SCHOOL OUR TEACHER DIDN'T DRESS THAT WAY.

ANEMOMETER measures wind, Force and Speed.

AND NOW FOR THE WEATHER...

Our Snowflakes
by Michael and Keesha

WEATHER FORECASTING MADE EASY

WEATHERMAN

Wind Sock

SNOW
RAIN
HAIL
and HEARTY

ADVENTURES OF WEATHERMAN
WEATHERMAN FACES THE STORM
WEATHERMAN MEETS SNOWMAN

THE EARTH IS WRAPPED IN A BLANKET OF AIR

by Tim

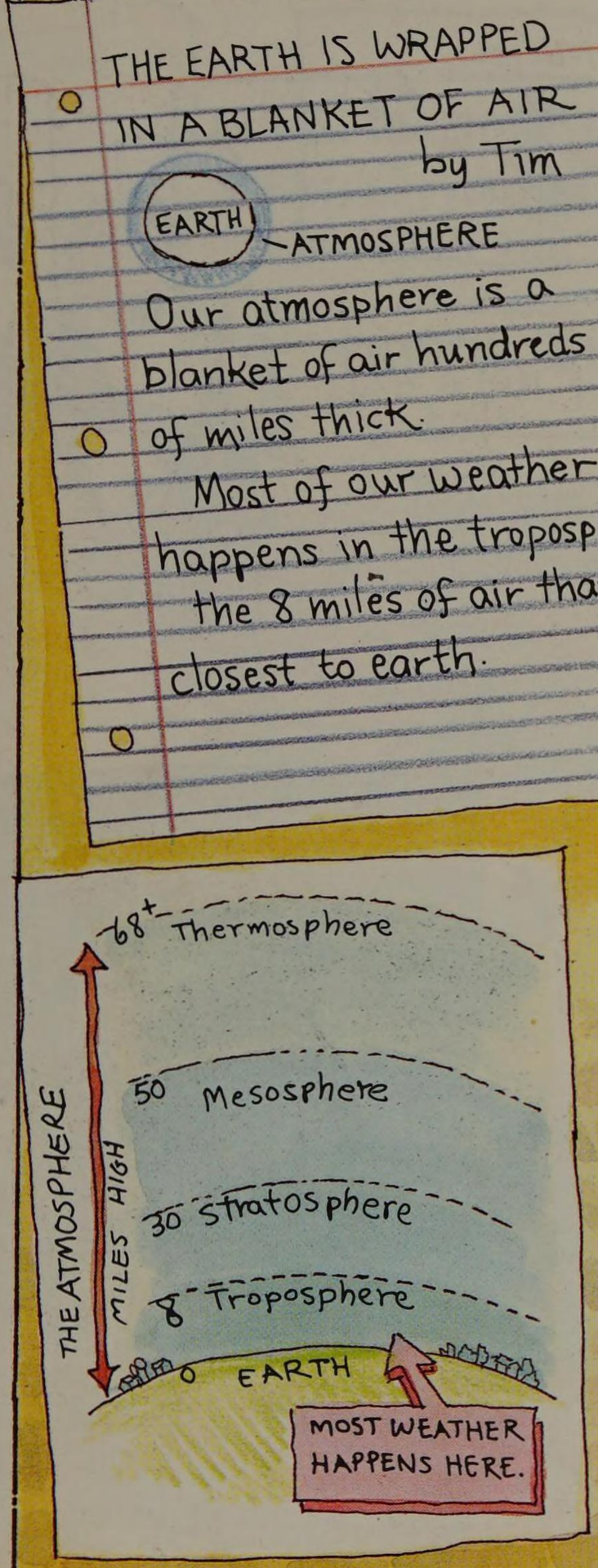
EARTH – ATMOSPHERE

Our atmosphere is a blanket of air hundreds of miles thick.

Most of our weather happens in the troposphere - the 8 miles of air that is closest to earth.

So we weren't surprised one morning when Ms. Frizzle said, "It's a perfect day for our trip to the weather station!"

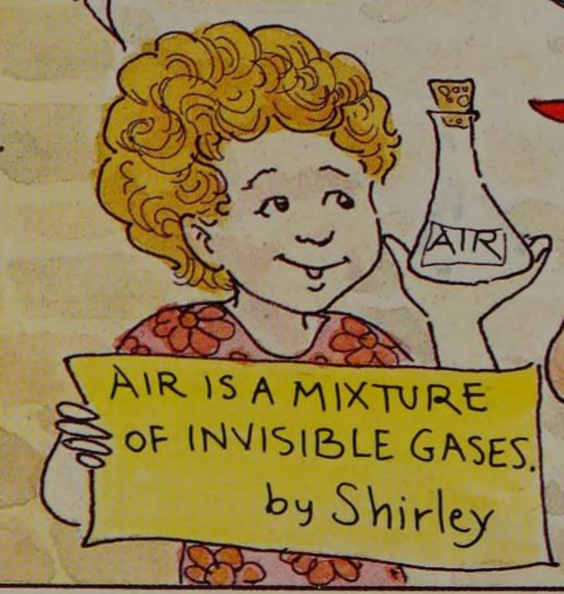
WE'LL MEET A TEAM OF WEATHER FORECASTERS. WE'LL LEARN ABOUT OUR ATMOSPHERE!



MS. FRIZZLE SAYS WE HAVE TO KNOW ABOUT AIR TO UNDERSTAND WEATHER.

AND WE HAVE TO KNOW ABOUT WATER, TOO.

I CAN'T SEE IT.

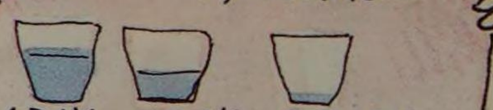


AIR IS A MIXTURE OF INVISIBLE GASES.
by Shirley

AIR HAS WEIGHT.
by Ralphie

A balloon with air in it is heavier than an empty balloon.

AIR CONTAINS WATER.
by Wanda



When water evaporates, water molecules go into the air.

We hadn't finished our experiments about air, but with Frizzie at the wheel, we were going — ready or not!

Q: WHEN DOES THE WEATHER CHANGE?
A: WHEN THE AIR CHANGES
by Shirley
1. Is the air hot or cold?
2. Is it dry or moist?
3. Is it still or moving?
When these things change, the weather changes!

SORRY, I CAN'T GO, MS. FRIZZLE. I HAVE TO SHARPEN MY PENCIL.

BUT ARNOLD, MAYBE WE'LL HAVE A REAL ADVENTURE.

IN THAT CASE, I HAVE TO SHARPEN SEVERAL PENCILS.

LOOK FOR A CHANGE IN THE WEATHER, FOLKS.

WHAT MAKES WIND?
by Arnold
A mass of heavy air rolls in and pushes on a mass of lighter air. When the air masses move, that is wind. Winds range from gentle breezes to strong gales that can destroy things.

In no time, we were riding along in the old school bus.
We were trying to get some music on the radio.
We didn't see Ms. Frizzle turning a strange little dial on the dashboard.
We didn't notice that the bus was changing.

WHOOSH

WIND IS JUST AIR THAT IS MOVING, CHILDREN.

LISTENERS, WINDS ARE PICKING UP SPEED.

THAT RADIO WON'T PLAY MUSIC.

ALL IT DOES IS GIVE THE WEATHER.

IT FIGURES.

All of a sudden Dorothy Ann said, "Look!"
We couldn't believe it.
We were all wearing flying suits.
We were sitting in a basket!
The bus had turned into a hot air balloon,
and we were about to lift off!

AT MY OLD SCHOOL, WE NEVER WENT UP IN HOT AIR BALLOONS.

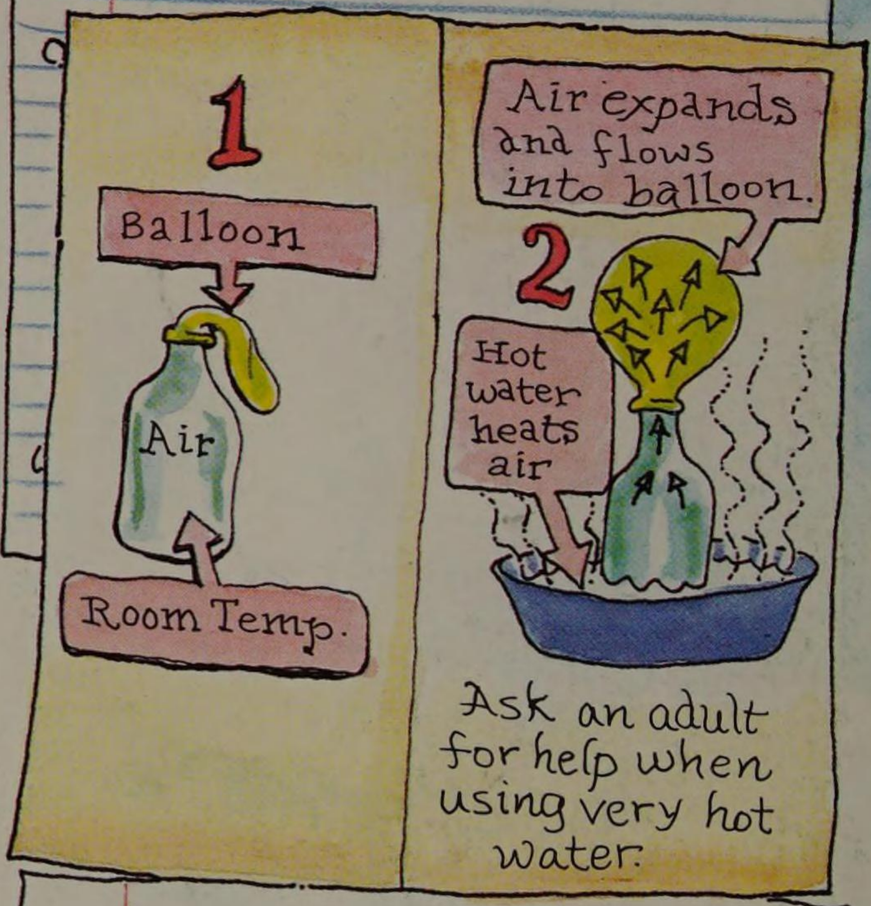
SOUNDS LIKE MY KIND OF SCHOOL.

WE'LL BE USING THIS GAS BURNER TO HEAT THE AIR IN THE BALLOON.

HEAT MAKES AIR EXPAND

by Molly

Hot air expands because heat makes air molecules bounce far apart.

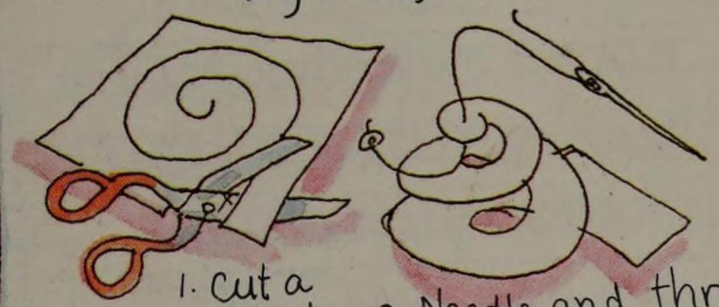


TWO WORDS FROM DOROTHY ANN

When something expands, it spreads out.

Air molecules are the tiniest bits of air.

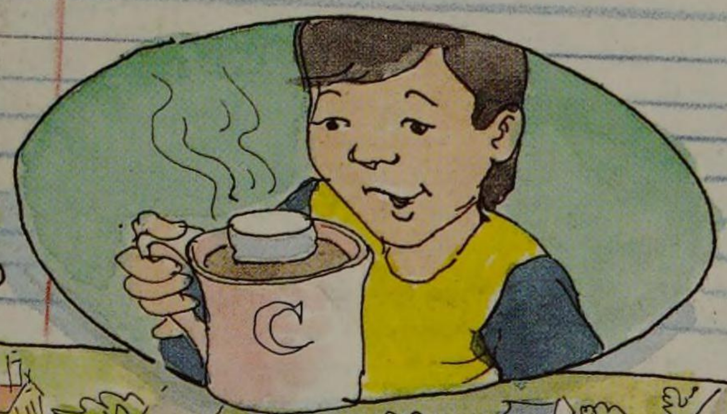
SEE HOT AIR RISE
by Alex and Rachel



1. Cut a spiral. 2. Needle and thread

WHY DOES HOT AIR RISE?
by Carlos

Hot air is lighter than cold air, so it "floats" on top of cold air, the way a marshmallow floats on hot chocolate.



We started going up, and Ms. Frizzle said, "Did I mention, children, that hot air rises?"

CLASS, EVERY DAY ALL OVER THE WORLD, SCIENTISTS SEND UP SPECIAL BALLOONS TO TAKE WEATHER MEASUREMENTS.
WEATHER BALLOON
WE'RE GOING UP!
WOW!

We rose higher and higher.
Even though hot air was filling the balloon,
the air around us was growing colder.
We had to put on warm jackets.

GOING UP?
BETTER BUNDLE UP!
by Phoebe

BRRR.

Warm air rises
from earth.
As it goes up,
it gets colder.

IT'S COLD UP HERE!

YOU'RE NOT AFRAID
OF HIGH PLACES,
ARE YOU, ARNOLD?

THAT RADIO SPOKE TO ME!

HOW DID IT KNOW MY
NAME?

I KNEW I SHOULD HAVE
STAYED HOME TODAY.

YOU CAN'T SEE IT,
BUT IT'S ALL
AROUND YOU.
WHAT IS IT?

Riddle Book

AIR!

A WEATHER WORD
by Dorothy Ann
When water condenses, molecules of water vapor join together and make drops of liquid water.

"Warm air rising from earth carries lots of water vapor molecules," Ms. Frizzle continued. "As the air rises, it cools down. The water condenses in the air and forms clouds."

DID YOU BRING YOUR RAINCOAT, ARNOLD?

TELL ME THIS ISN'T HAPPENING....

We drifted into the center of a cloud.
Ms. Frizzle was right — it was *damp* in there.
The cloud was made of tiny water droplets
hanging in the air.

THREE KINDS OF CLOUDS
by Wanda

1. Curly or wispy clouds are called cirrus.

2. Layered clouds are called Stratus.

3. Lumpy or puffy clouds are called cumulus.

WHEN IS THAT TEACHER BRINGING HER CLASS?

NOT TILL LATER.

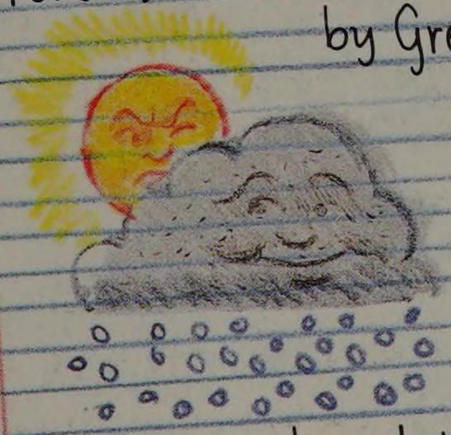
MUCH LATER...

WHAT KIND OF CLOUDS ARE FORMING AROUND MS. FRIZZLE AND THE KIDS?

WEATHER STATION

WHAT MAKES RAIN CLOUDS TURN DARK?

by Gregory



Rain clouds have lots of ice crystals and big, heavy raindrops. These block out the sun.

Inside the cloud, droplets began coming together.
They formed bigger and bigger drops.
As the drops became heavier, they started falling.

IT TAKES THOUSANDS OF DROPLETS TO FORM JUST ONE RAINDROP.

MOST CLASSES STAY IN ON RAINY DAYS.

NOT MS. FRIZZLE'S CLASS!

OUR RAINMAKING PROJECT

by Amanda Jane and Arnold

WHEN YOU USE THE STOVE...

...REMEMBER TO ASK AN ADULT TO HELP.

Down below, the weather forecasters were standing in the rain.
They didn't see us inside the cloud, but we could hear their voices.
One of them said, "I hope that teacher knows there's a *hurricane watch* in effect."

CHECK OUT MY HURRICANE WATCH, ARNOLD. GET IT? HURRICANE WATCH!!

I'M PRETENDING I CAN'T HEAR....

WHAT IS A HURRICANE?
by Florrie

A hurricane is one of the most violent kinds of storms.

In a hurricane, winds swirl in a circle around the storm's center at 74 miles per hour or more!

MORE WORDS FROM DOROTHY ANN

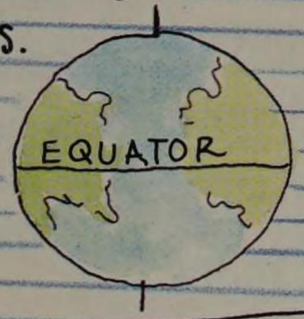
A Hurricane Watch means that a hurricane may strike within the next 36 hours.

A Hurricane Warning means that a hurricane is likely to strike within the next 24 hours.

A warning is more urgent than a watch.

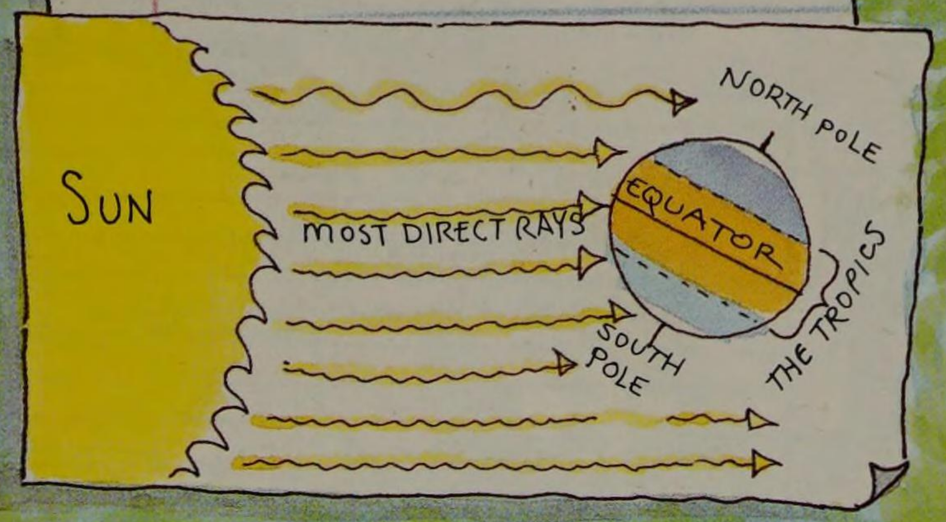
WHAT IS THE EQUATOR?
by Carlos

The equator is an imaginary line around the earth's middle. It divides the globe into two equal parts.



WHY IS IT HOTTER NEAR THE EQUATOR?
by Michael

Because of the way the earth is tilted, the sun's rays almost always shine toward the earth's middle. This means there are no cold winters there.



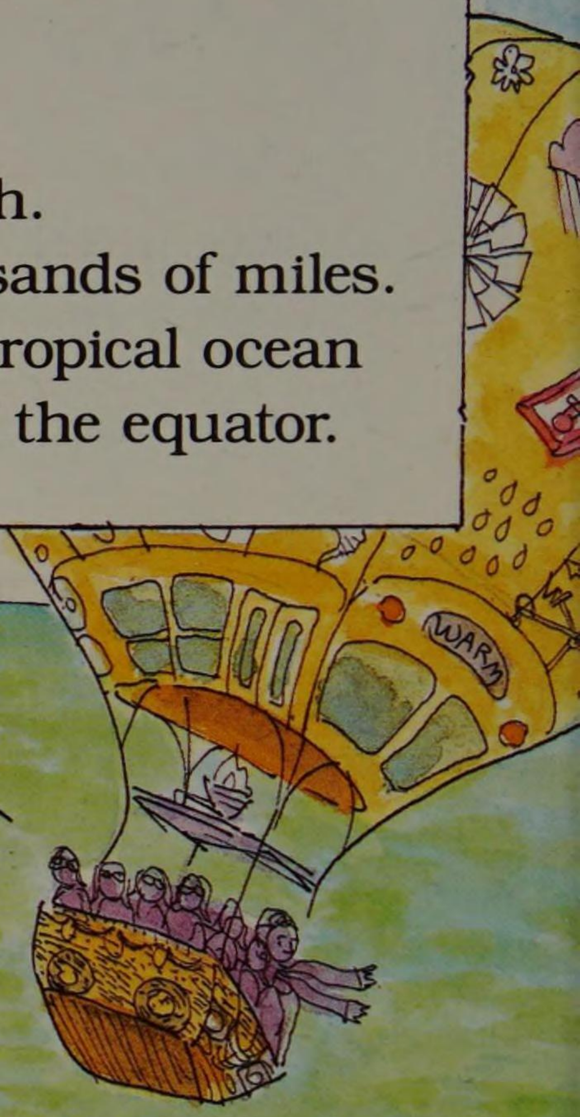
As usual, Ms. Frizzle paid no attention.
She turned up the fire, and more
hot air rushed into the balloon.
As we rose above the cloud,
the wind started pushing us south.
Before long, we had traveled thousands of miles.
Ms. Frizzle said we were above a tropical ocean
about five hundred miles north of the equator.

WOW! LOOK AT THAT WATER!

WE CAN GO SWIMMING!

AND WINDSURFING!

AND SNORKELING!



Below us, blue-green waves were sparkling.
On a sandy island, palm trees were waving.
It looked like a vacation paradise to us.
But Frizzie said, "Class, we have now arrived at one of the world's hurricane breeding grounds!"

NEARLY ALL HURRICANES GET STARTED OVER WARM TROPICAL OCEANS, KIDS.

I'VE HEARD THAT HURRICANES ARE DANGEROUS.

SO MS. FRIZZLE IS TAKING US TO ONE.

SHE WOULD!

WHY DO HURRICANES HAVE NAMES?
by Carmen

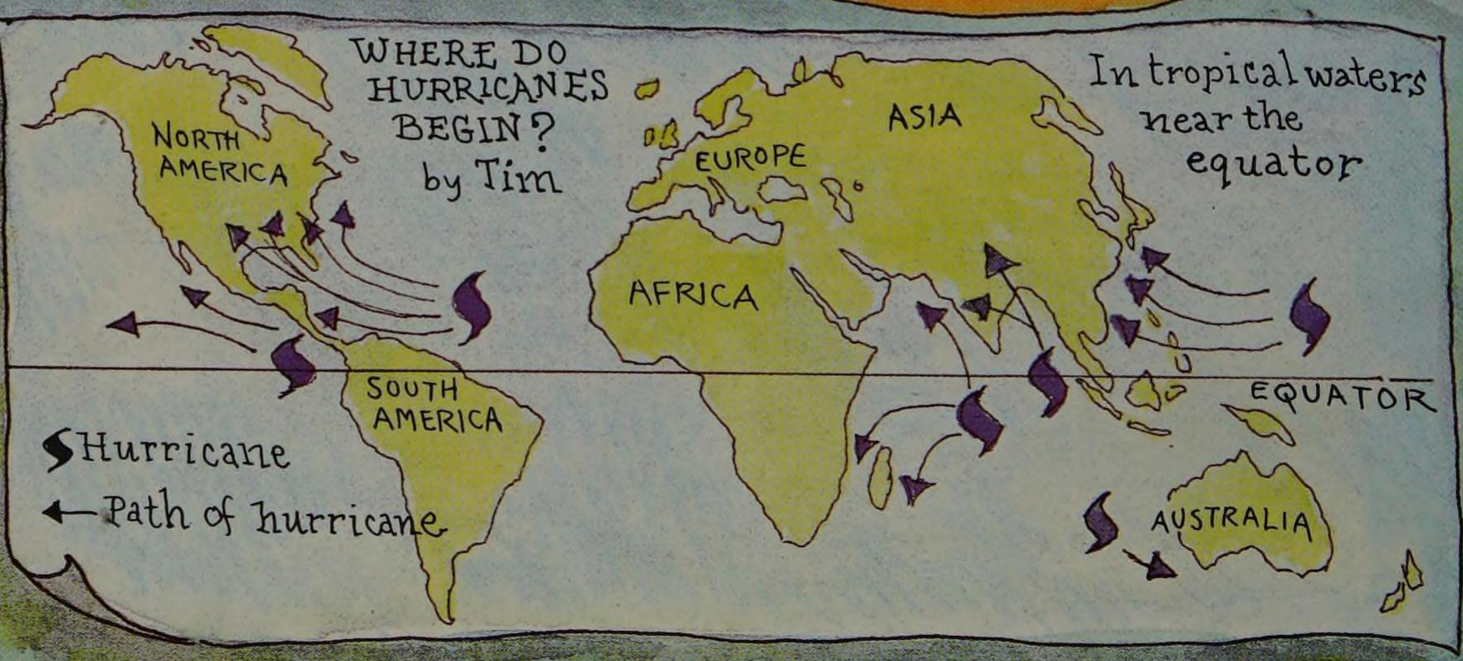
Often, more than one hurricane is brewing at once. It's easier to keep track of them if they are given names.

Some famous hurricanes:

- Agnes
- Andrew
- Bob
- Elena
- Gilbert
- Gloria
- Hugo

HI BOB!

WHAT'S HAPPENING GLORIA?



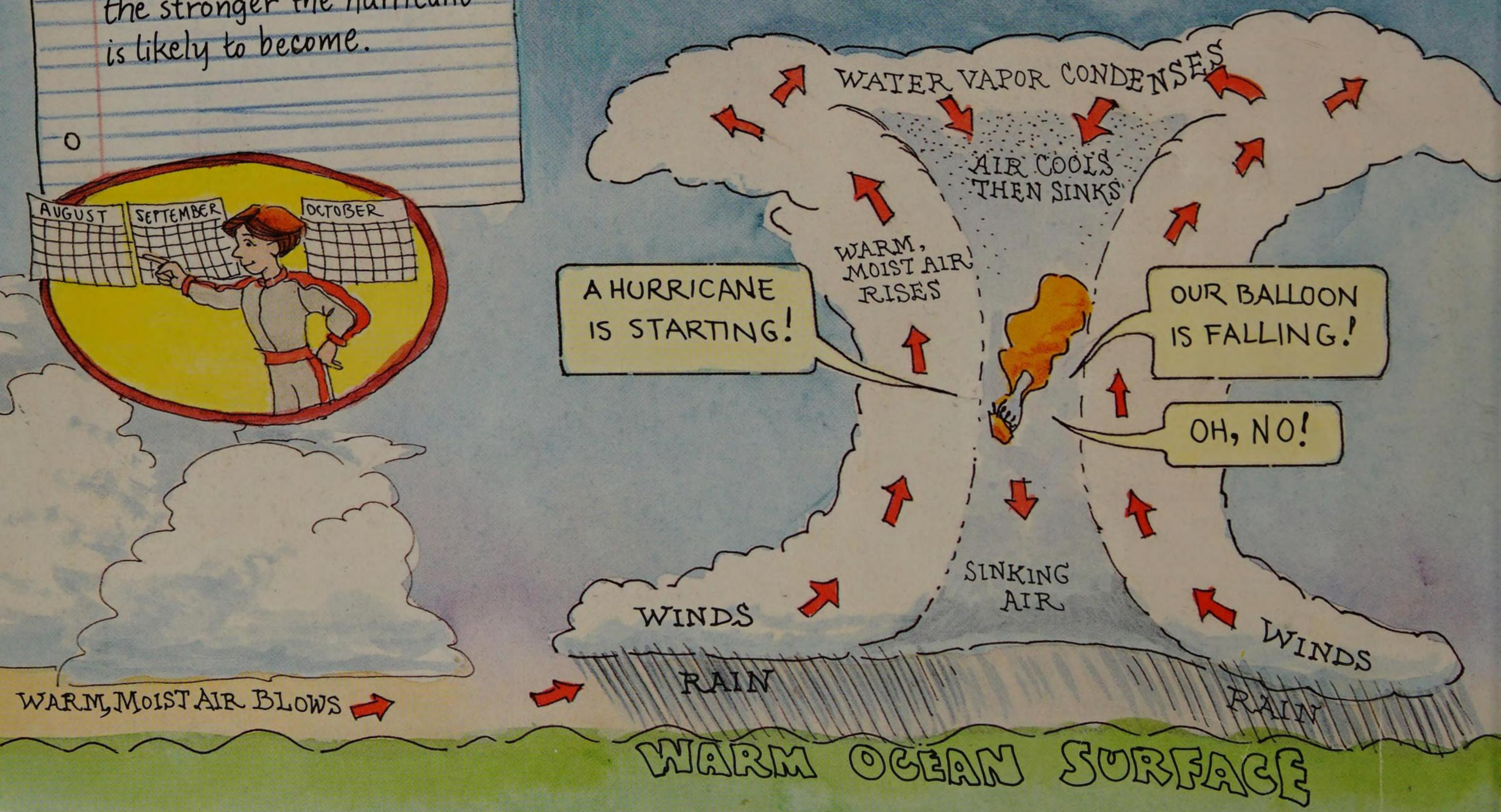
WHEN IS HURRICANE SEASON?

by Rachel

Most hurricanes begin in the late summer and early fall. That is when tropical oceans are warmest.

The warmer the ocean is, the stronger the hurricane is likely to become.

"Class, remember that as hot air rises from the ocean surface, the water vapor in the air condenses and forms clouds," said the Friz. Down below, more hot air rushed in from all sides to take the place of the rising air. In the middle of the rising air, a column of sinking air formed. We started sinking with it.



"Oh dear," said Ms. Frizzle.
"The balloon must have sprung a leak."
Hot air was rushing out, and the balloon was plummeting fast.
"Jump ship, class!" shouted the Friz.
She jumped overboard, and we went after her.
Right away, we knew it was a big mistake.

DO ALL TROPICAL STORMS BECOME HURRICANES?

by Amanda Jane

No. All around the world, there are more than 100 tropical storms each year. Only about 60 of them grow to hurricane strength. And only a handful of those ever reach places where people live.

HURRY UP AND JUMP, ARNOLD!

I CAN'T LOOK!

FOLLOW ME, KIDS!

WHAT MAKES HURRICANE WINDS BLOW IN A CIRCLE?

by Alex

Winds begin by blowing straight. But the movement of the earth as it spins on its axis makes them curve.

The faster winds blow, the more they curve. Hurricane winds are <u>very</u> fast, so they curve and curve until they make a circle.

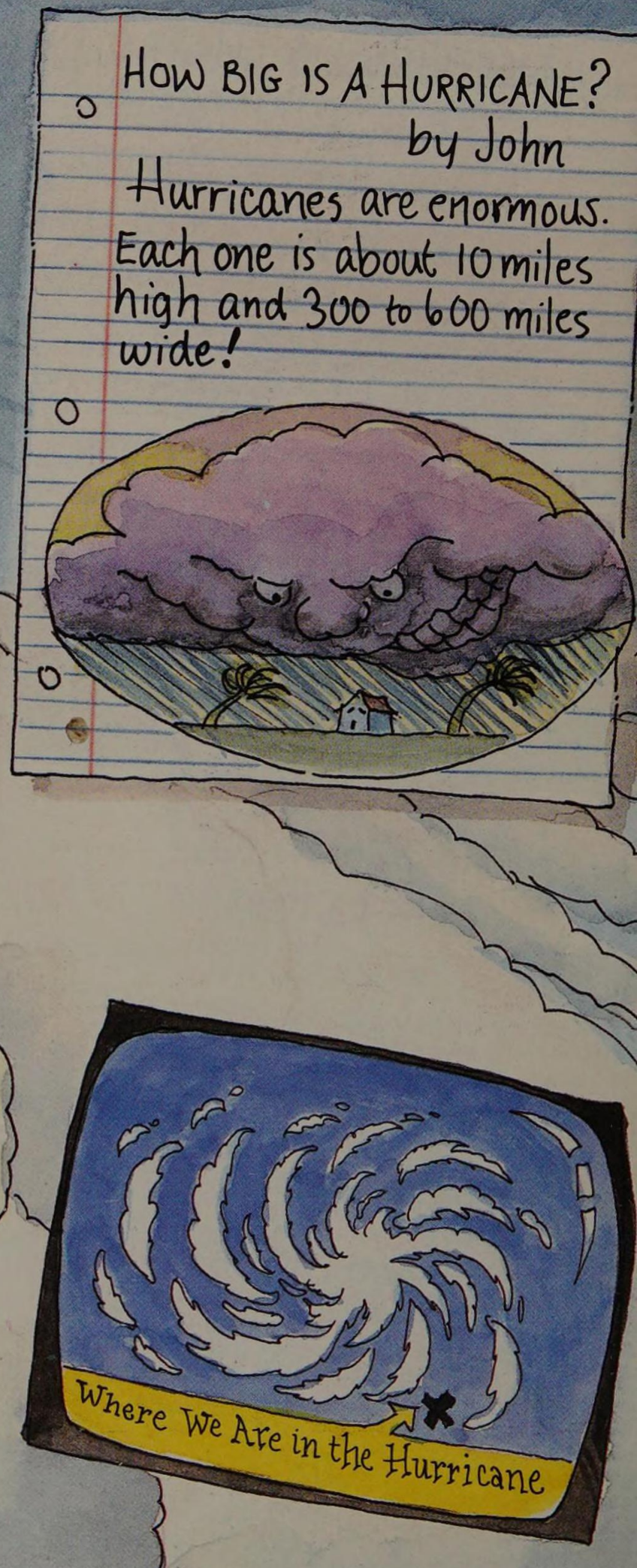
The wind was blowing the clouds into a huge circle.
"The storm is starting to take on the typical shape of a hurricane. Isn't it fascinating, children?" shouted Ms. Frizzle.

HELP!

WE'RE GOING AROUND IN CIRCLES!

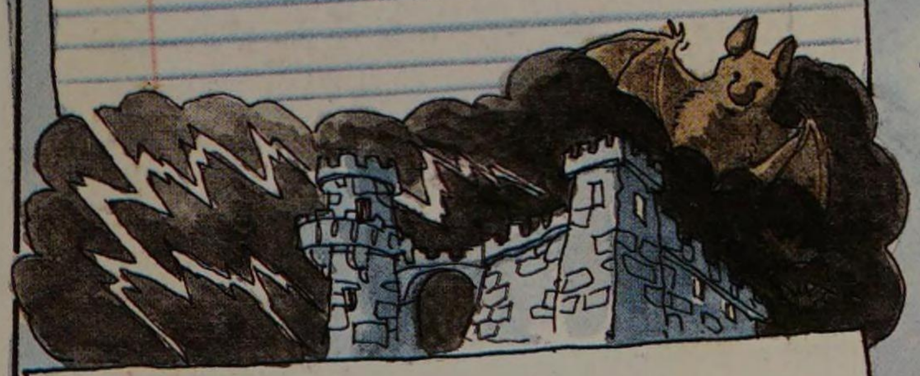
I'M GETTING DIZZY!

It was more than fascinating.
It was terrifying!
We were caught in the edge of the storm,
blowing around and around in a giant whirlwind.
That whirlwind was a hurricane!


HOW BIG IS A HURRICANE?
by John
Hurricanes are enormous. Each one is about 10 miles high and 300 to 600 miles wide!
A TYPICAL HURRICANE HAS A LIFE SPAN OF ABOUT 10 DAYS.
LISTENERS- WE'LL BE TELLING YOU ABOUT THE WHOLE HURRICANE.
MAYBE ITS BATTERIES WILL RUN OUT SOON.
Where We Are in the Hurricane

LIGHTNING IS ELECTRICITY
by Ralphie

Clouds become charged with electricity. When the voltage gets high enough, electricity leaps from one place to another. Then we see lightning.



LIGHTNING IS HOT!
by Keesha

A lightning bolt reaches a temperature of 50,000° F. That's about five times hotter than the sun's surface!

In the clouds around us,
huge bolts of lightning were flashing.
We thought it was all over for us,
but then we saw the bus again.
It had become a weather plane —
the kind that explores hurricanes.
We tumbled into a rescue chute
and fell onto the plane . . . that is,
the bus . . . er . . . we mean the plane.

DURING A THUNDER-STORM, LIGHTNING CAN MAKE MORE ELECTRICITY THAN A BIG CITY USES IN A WEEK!

IT'S OUR BUS!

IT LOOKS DIFFERENT!

LET'S GET ON NOW!

COME BACK!

ALL ABOARD

Thunder crashed and boomed.
We covered our ears.
Ms. Frizzle turned the plane,
and we headed straight toward
the center of the storm.
We had the feeling someone
was missing.

WE ARE NOW EXPERIENCING THE HURRICANE CLOSE UP....

BUT NOT TO WORRY, ARNOLD, I'M SURE WE'LL BE FINE.

RADAR

RADAR

BOOM

THUNDER IS A SOUND MADE BY AIR by Phoebe

Lightning heats up air and makes it expand. Thunder is the sound of the air expanding.

When you open a soft drink can, you hear a "pop." That's the sound of air expanding. It's just like thunder, only much smaller.

POP

COLA

WHY DOES EVERYTHING ALWAYS HAPPEN TO ME?!

THUNDERSTORMS: RAIN, RAIN, AND MORE RAIN

by Florrie

In 20 minutes, one thunderstorm sends down 125 million gallons of water!

We flew through miles of thunderstorms, and Ms. Frizzle took roll call. Guess who was missing — Arnold! He had fallen and missed the plane!

ARNOLD IS NOW EXPERIENCING THE HURRICANE CLOSE UP....

ARNOLD FELL!

BUT NOT TO WORRY, TIM. I'M SURE HE'LL BE FINE.

POOR KID!

OH NO!

Arnold

Where We Are in the Hurricane

Ms. Frizzle marked Arnold absent and flew straight into the storm.

WE'RE FLYING INTO THE HURRICANE!

WHAT A DISASTER!

WHY DOES EVERYTHING ALWAYS HAPPEN TO US?!

WE'LL BE SEEING STORMY SEAS TODAY, ARNOLD.

SEEING STORMY SEAS?! I'M TOUCHING THEM... SMELLING THEM... GULP!...TASTING THEM!

S.S. MINIBUS

S.S. SCHOOL BUS

HOW FAST DO THE WINDS BLOW INSIDE A HURRICANE?

by Carmen

Outer hurricane 40 mph
Middle hurricane 74 mph
Inner hurricane 120-150 mph

HOW FAST IS THE WIND BLOWING AT THE EYE WALL, KIDS?

The farther in we went;
the faster the winds blew.
At last, we came to the inner hurricane
and entered the eye wall — a ring of
heavy clouds around the storm's center.
In the eye wall, the winds
were blowing the fastest yet!
And the rain was coming down
in sheets!

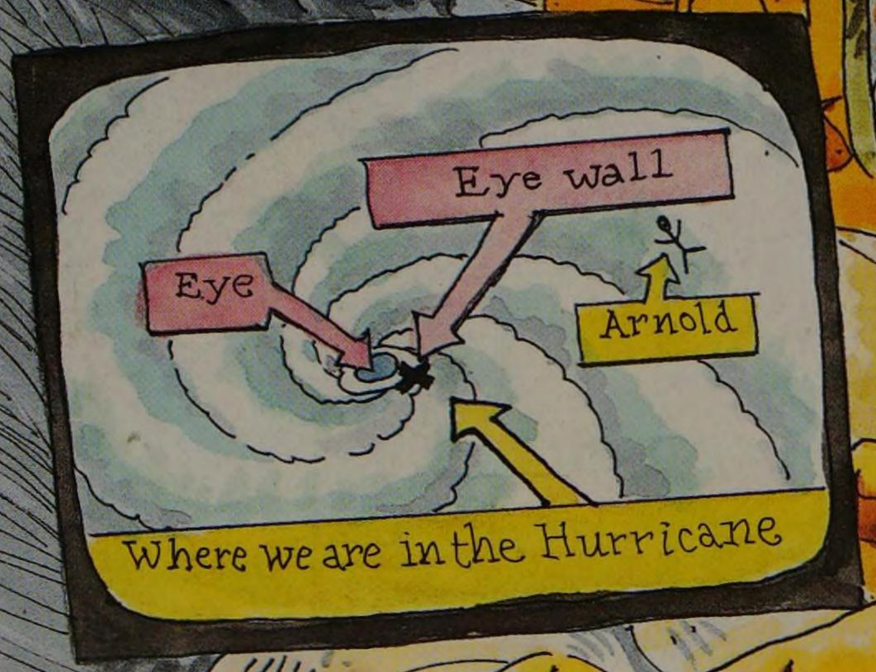
THE EYE WALL IS THE FIERCEST PART OF THE HURRICANE!

WE'RE ENCOUNTERING TURBULENCE, CLASS.

TURBULENCE IS WHEN THE AIR IS VIOLENTLY DISTURBED.

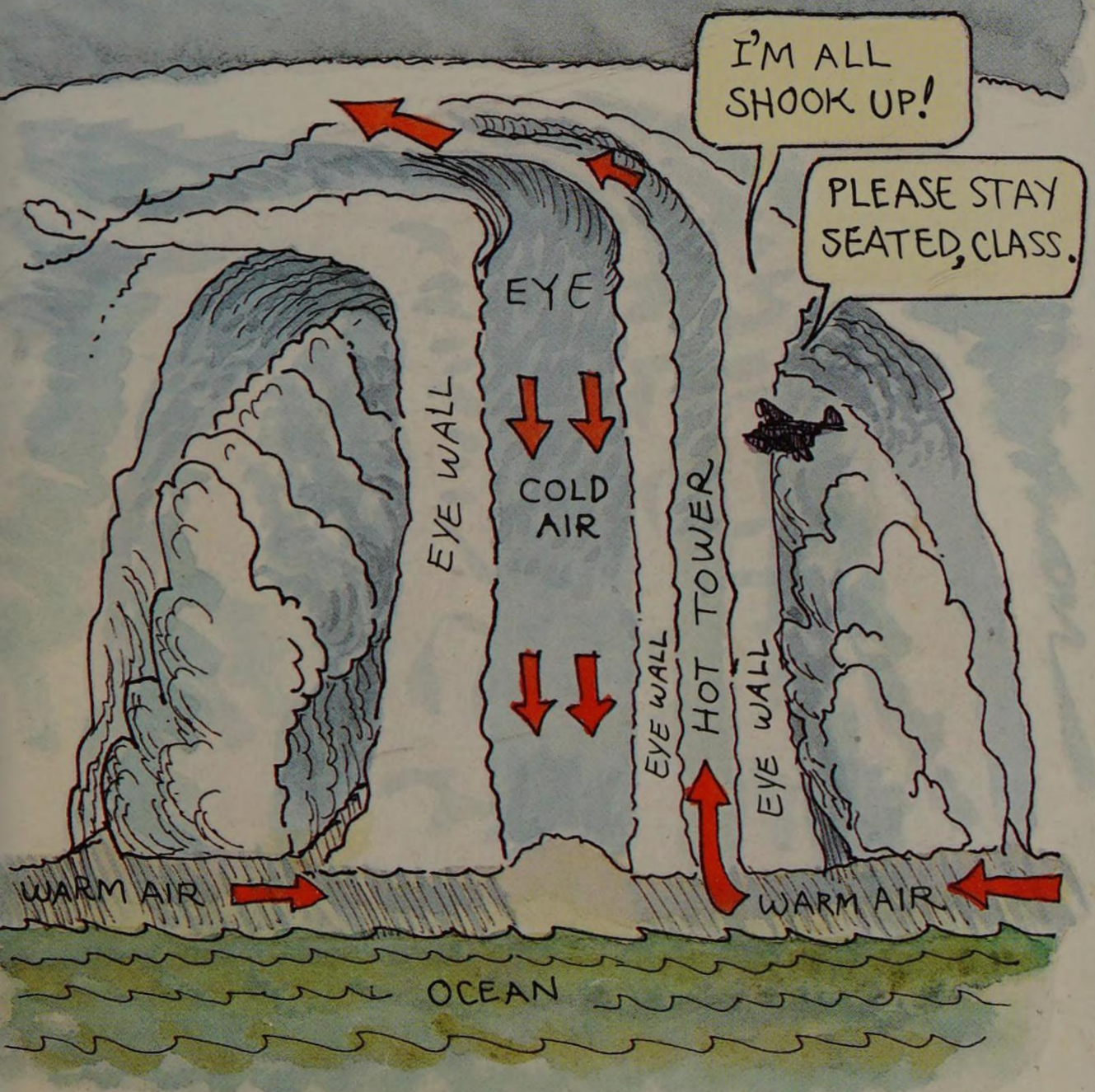
I AM VIOLENTLY DISTURBED!

DICTIONARY



Where we are in the Hurricane

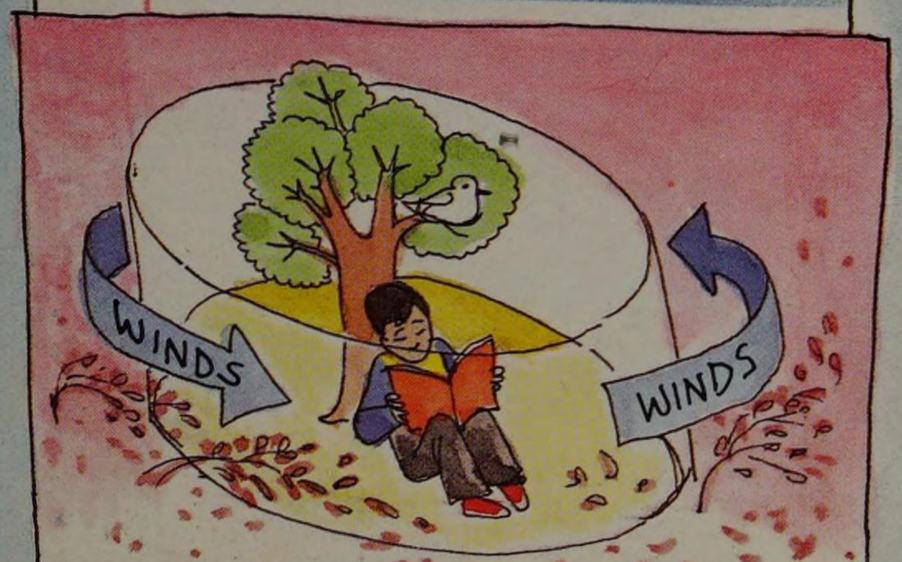
All around were columns of air
called hot towers, or chimneys.
They were sucking up more and more
hot moist air from the ocean.
The heat energy from the air
was feeding the storm
and making it stronger.
The plane was shaking
and so were we!

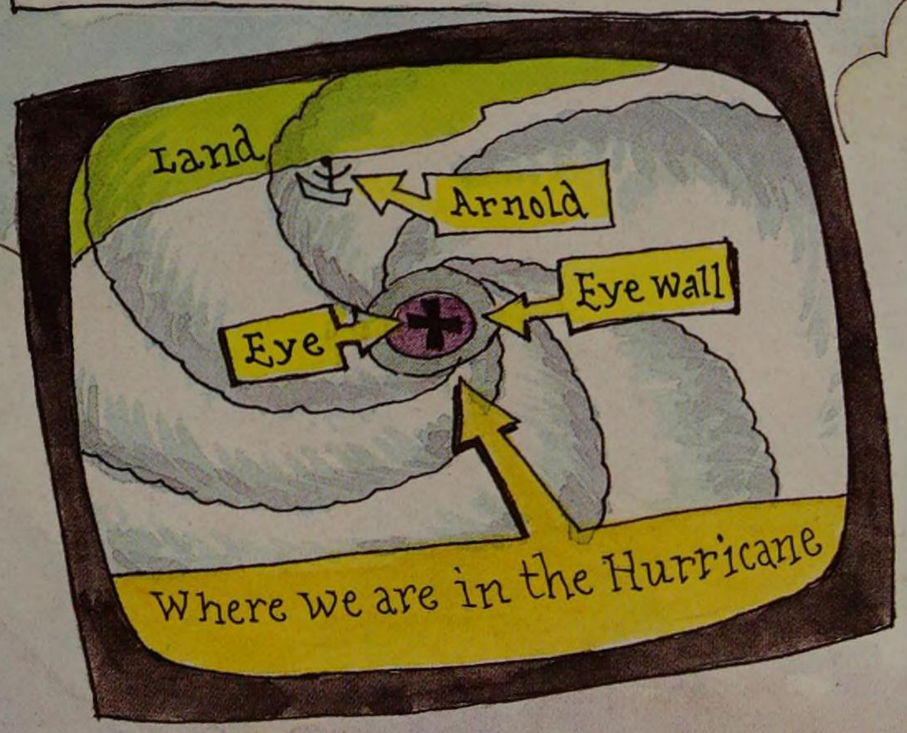


HEY KID, HOW DID YOU GET OUT HERE?
FISHY II
S.S. SCHOOL BUS
IT'S A LONG STORY....
WAVES WILL BE AS HIGH AS A HOUSE.
THE WIND SPEED IS 40 MPH HERE.

IT'S QUIET IN THE EYE OF A HURRICANE by Carlos

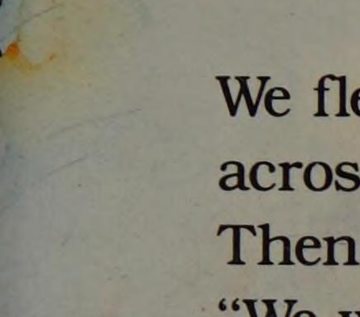
The fierce swirling winds of the hurricane do not enter the center of the storm.





Then suddenly everything was quiet.
"Class, we have entered the eye — or center — of the hurricane!" announced Ms. Frizzle.
The ocean waves still crashed below
and the winds howled outside,
but in the eye only gentle breezes blew.
Up above, the sky was blue
and the sun was shining.
We relaxed and enjoyed ourselves.

We flew about thirty miles
across the eye.
Then the Friz called out,
"We will enter the other side
of the eye wall now."
"Don't go!" we cried,
but the plane was already
on its way — back into the
hurricane's fierce wind and rain.



WHY DON'T HURRICANE WINDS BLOW INTO THE EYE?

by Shirley

The winds swirl in toward the eye of the storm, but they do not enter it because they are pushed out by the same force that pushes you outward when you spin around.

WE'RE TRYING TO REACH LAND BEFORE THE FULL FORCE OF THE HURRICANE HITS!
GOOD IDEA!
THE HURRICANE IS APPROACHING LAND. THERE WILL BE HEAVY FLOODING ALONG THE COAST.

How Hurricanes Travel

by Wanda

When a hurricane starts, it usually moves slowly—about 10 to 20 miles per hour. As the storm gets farther north, its speed can increase up to 60 miles per hour!

Hurricanes can travel hundreds of miles each day.

The entire hurricane was moving across the ocean toward land, and we were going with it!

"The right forward corner of the hurricane as you are looking toward land has the strongest wind and rain and the highest ocean waves," shouted the Friz. Naturally, she flew directly into that part.

A HURRICANE MOVES LIKE A TOP SPINNING ACROSS THE FLOOR.

IT MOVES TWO WAYS—

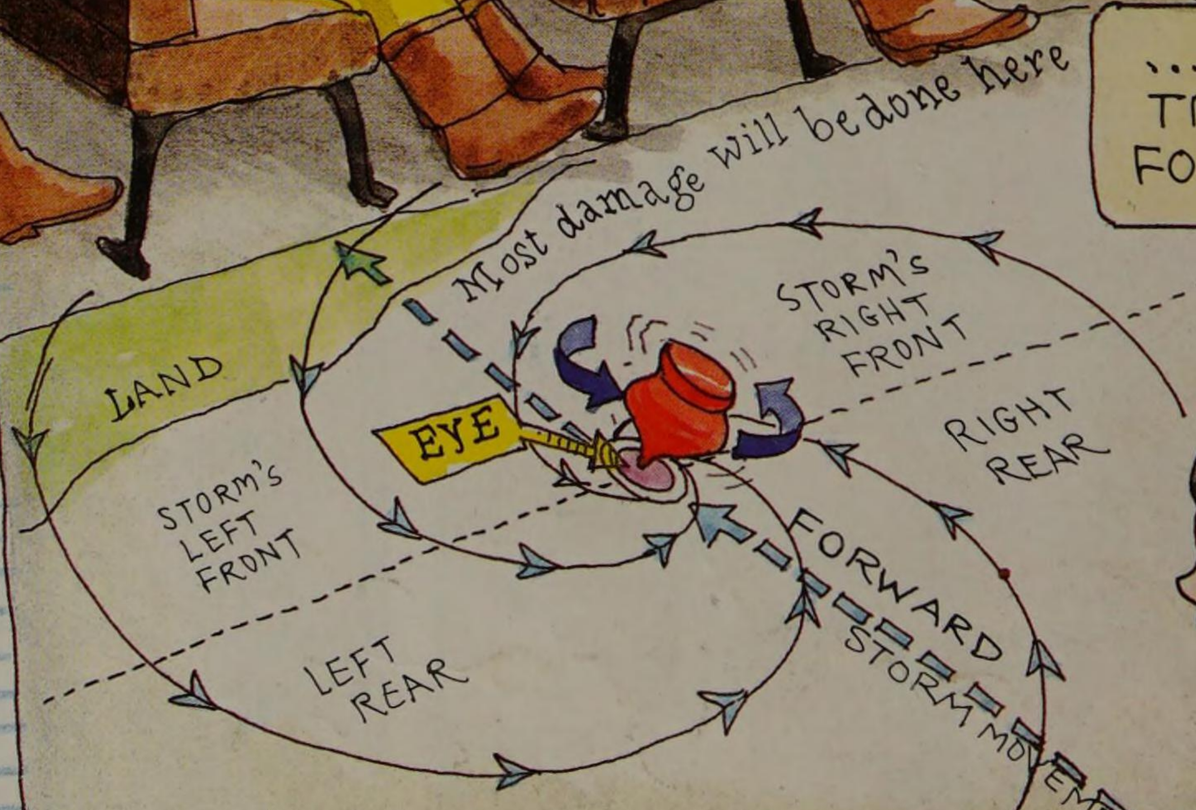
IT SPINS AROUND...

...AND, IT TRAVELS FORWARD.

Which Part of the Hurricane Is Strongest?

by Florrie

The right front corner is strongest because the whirling winds are circling toward the shore. They add their strength to the winds that move the storm forward.



ARNOLD SHOULD BE REACHING LAND ANY MINUTE NOW.

LET'S TAKE A SPIN.

THE HURRICANE SHOULD BE REACHING LAND ANY MINUTE NOW.

WE MUST EVACUATE BEFORE THE FLOODS COME.

SALT WATER TAFFY

TELL ME ABOUT IT!

HURRICANE EVACUATION ROUTE

ANOTHER WEATHER WORD

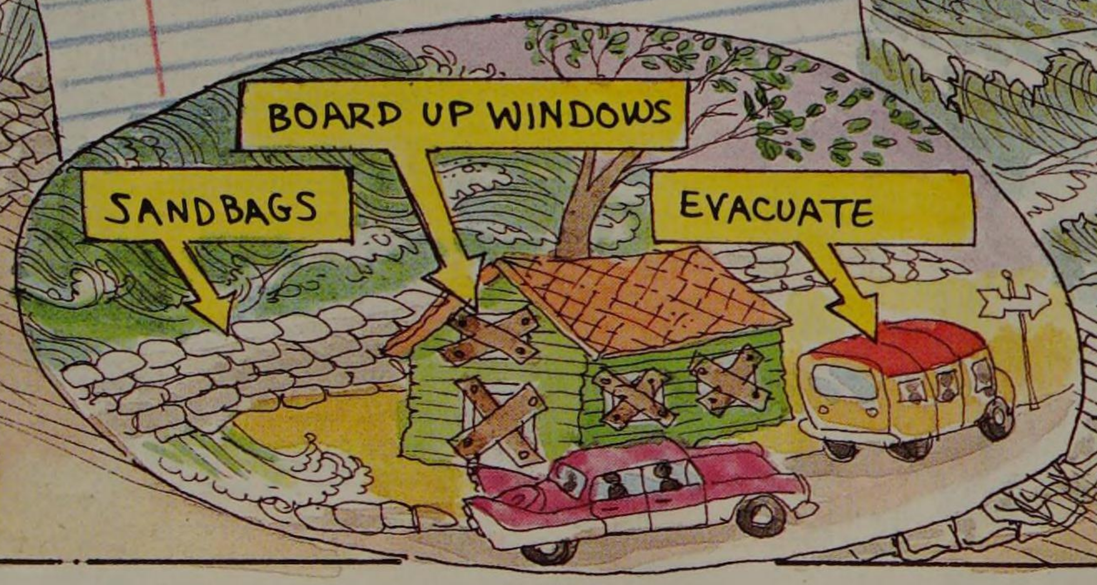
by Dorothy Ann

When people evacuate an area, they get out of there fast!

HURRICANES...THEN AND NOW
by Ralphie

In the past, there was less property damage. Today, coastal areas are more built up. So more houses and buildings are damaged in hurricanes.

But today, not as many lives are lost! In past times, many people were killed because no one knew when hurricanes were coming. Today, weather forecasts tell us to get ready for hurricanes.



As the hurricane approached land,
the wind pulled up trees by the roots
and blew the roofs off houses.
It also blew ashore a huge dome of water
called the storm surge.
The ocean rose ten feet higher than usual
and, on top of that, there were giant waves.
We were horrified as we watched the storm surge
sweep over the shore below.

IN 1900, MORE THAN 6,000 PEOPLE DROWNED WHEN A STORM SURGE SWEPT ACROSS GALVESTON ISLAND, TEXAS, CLASS.

THAT WAS A LONG TIME AGO.

IT WOULDN'T HAPPEN NOW.

But that was nothing compared to the horror we felt when we heard the Friz shouting above the sound of roaring water,
"We seem to be running out of gas, children!"
Sure enough, the plane was dipping lower and lower.

As we fell into the water, we saw Arnold waving to us from a nearby roof.

THAT KID LOOKS FAMILIAR.

THAT PLANE LOOKS FAMILIAR.

TODAY, HURRICANE PREDICTIONS SAVE LIVES.

GAS! ALERT!

JOE'S DINER

ARNOLD, WE NEED TO EVACUATE NOW!

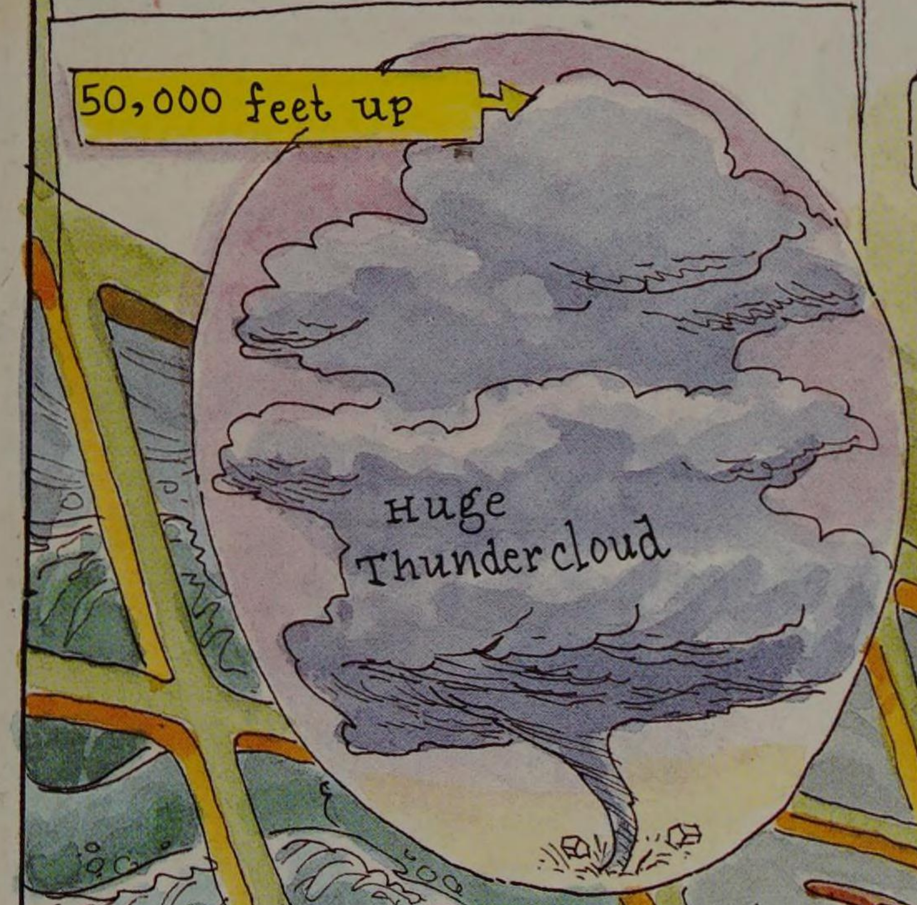
SALT WATER TAFFY

WHAT IS A TORNADO?

by Arnold

A tornado is a twisting funnel-shaped whirlwind that hangs from a thunder cloud.

Somehow Arnold managed to get on the plane
before we were swept away by the waves
at the front edge of the hurricane.
The water was creeping up the windows.
The plane was going to sink for sure!
Then we saw a dark, funnel shape coming our way.



WE FELL INTO THE OCEAN....

A FISHING BOAT PICKED US UP....

WE THOUGHT WE WERE GONERS!

WE FLEW INTO THE EYE....

THE EYE WALL WAS THE WORST....

WE THOUGHT WE WERE GONERS!

WE ARE GONERS!

"I've seen that shape on TV," said Ralphie.
"I read about it in a book!" said Keesha.
The twister came right for us.
The next thing we knew, it had picked us up,
and we were traveling by tornado!

TORNADOES OFTEN OCCUR AT THE EDGES OF HURRICANES THAT ARE MOVING OVER LAND, CLASS.

ARE TORNADOES AND HURRICANES ALIKE?
by Phil

Yes and no.

Tornadoes and hurricanes are both whirlwinds.

But tornadoes:

1. are much smaller than hurricanes
2. have faster winds, for the most part
3. destroy almost everything in their path.

Tornadoes can twist at speeds of 200 to 300 miles per hour.

A TYPICAL TORNADO HAS A SHORT LIFE SPAN— ONLY A FEW MINUTES.

I THINK MY LIFE SPAN JUST GOT SHORTER.

CAN TORNADOES REALLY CARRY OBJECTS?

by Keesha

Yes! Tornadoes are like giant vacuum cleaners. They lift dirt, trash, and even large objects, such as houses, cars, trees, and railroad trains!

Once a tornado picked up a crate of eggs and set them down miles away. Not one egg was broken!

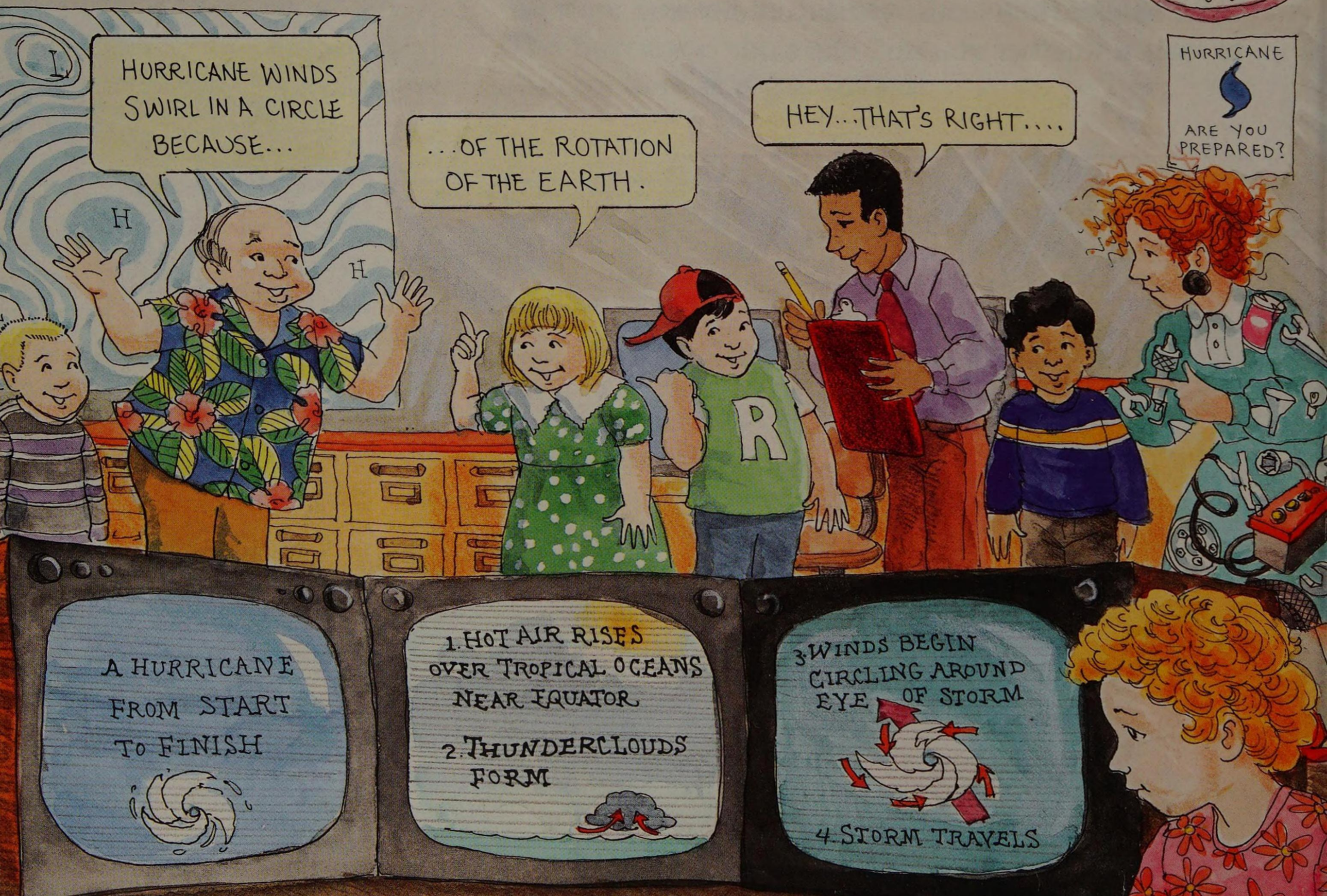
After a while we felt a bump and looked around.
The tornado had set us down gently.
We were in our old school bus again.
We were dressed in our regular clothes again.
The hurricane was over.
And we were at a gas station.

Ms. Frizzle filled up the tank
and drove down the road
as if nothing had happened.
"As I said earlier, class, we are on our way
to visit a weather station," she said.

GAS
TAKE OUR CASE, FOR EXAMPLE. WE'RE ALL OKAY.
EVEN THE RADIO IS STILL WORKING FINE.
HERE'S A TREAT JUST FOR YOU, ARNOLD— ANOTHER WEATHER UPDATE....
THAT DEPENDS ON WHAT YOU MEAN BY "WORKING FINE."

WEATHER STATION

The weather forecasters at the station had a lot to tell us about hurricanes. *We* had a lot to tell *them*, too!


HURRICANE WINDS SWIRL IN A CIRCLE BECAUSE...
...OF THE ROTATION OF THE EARTH.
HEY...THAT'S RIGHT....
HURRICANE
ARE YOU PREPARED?
A HURRICANE FROM START TO FINISH
1. HOT AIR RISES OVER TROPICAL OCEANS NEAR EQUATOR
2. THUNDERCLOUDS FORM
3. WINDS BEGIN CIRCLING AROUND EYE OF STORM
4. STORM TRAVELS

A HURRICANE DIES AS IT MOVES OVER LAND BECAUSE...

...THERE IS NO MORE HOT, MOIST OCEAN AIR TO FUEL THE STORM.

THE KIDS KNOW A LOT ABOUT HURRICANES DON'T THEY, AL?

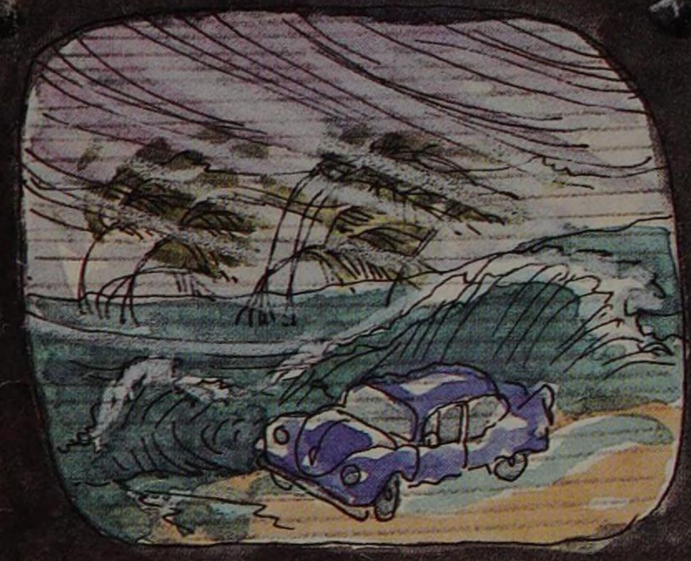
THAT RADIO SPOKE TO ME!

HOW DID IT KNOW MY NAME?

I KNEW I SHOULD HAVE STAYED HOME TODAY.

5. CIRCLING WINDS INCREASE TO 74 MPH OR MORE

6. IF HURRICANE REACHES SHORE, LAND IS FLOODED BY STORM SURGE



7. HURRICANE FADES GRADUALLY AS IT MOVES INLAND

Finally, we drove back to school and finished up our weather projects.

THE FUTURE OF HURRICANES
MORE, MORE, MORE?

by Amanda Jane

During times when the earth is warmer, there may be more hurricanes.

Many scientists think the earth's temperature is going up. If this is true, there could be more hurricanes in our future.

THREE BAD THINGS HURRICANES DO
by John

① Hurt people

② Destroy property

③ Make floods

THREE GOOD THINGS HURRICANES DO
by Gregory

① Balance earth's temperature by drawing away hot air

② Bring rain to dry places

③ Clean the air with falling rain

GLOBAL WARMING COULD MEAN MORE HURRICANES...

...AND THEY MIGHT BE STRONGER!

Weather Vane
paper
Straw
Pen top
N
E
S
W
Nail

Rain Gauge
Put beaker out in rain.
How many inches fell?

by Amanda Jane

MAKE A TWISTER IN A BOTTLE

by Ms. Frizzle

① Fill a bottle 2/3 full of water.

② Hold bottle over sink.

③ Cover opening with one hand and turn bottle upside down.

④ Move bottle rapidly in a circle.

⑤ Stop circling. Take hand away from opening.

⑥ See twister in bottle as water runs out.

I WANT TO FIND OUT MORE ABOUT...

How to keep safe in hurricanes, tornadoes, and thunderstorms.
—Wanda

How snowflakes form
—Ralphie

What is Fog?
—Arnold

What causes frost on windowpanes?
—Rachel

AND NOW FOR SOME MUSIC....

WHAT? NO MORE WEATHER?

COOL!

ALL RIGHT!

MY FAVORITE TEMPERATURE
by Carlos
98.6° Normal!

MY FAVORITE CLOUD
by Shirley
It looked like a bunny!

MY FAVORITE HAILSTORM
by Arnold
I was safe in bed.

After that trip, we needed some time to relax.
Ms. Frizzle said we could have a party.
We had great games, crazy dancing, and yummy snacks.
And for a while, we didn't even think about
Ms. Frizzle's next class trip!

YOU DANCE QUITE WELL FOR A RADIO.

SINGIN' IN THE RAIN...

In Asia, a hurricane is called a typhoon.

WHAT'S BUZZIN', COUSIN?

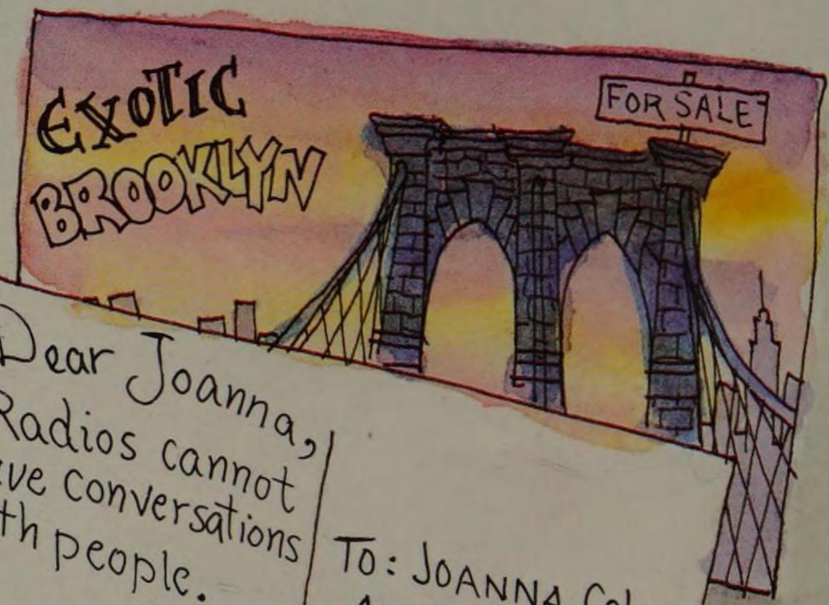
MS. FRIZZLE'S BUSY BEES

AT MY OLD SCHOOL OUR TEACHER NEVER WORE BEE SHOES!

The Magic School Bus Mail Bag

Letters... we get letters...

To the Magic School Bus Editor:
You should not have said that a school bus could turn into a hot air balloon or a weather plane. That cannot really happen. Your friend,
Sam



Dear Joanna,
Radios cannot have conversations with people.
Barbara

To: JOANNA COLE
AUTHOR
c/o Scholastic Inc.

Dear Joanna and Bruce,
Reading about hurricanes may be fun, but it is no fun to be in one!
I know because my family was in Hurricane ANDREW and it was scary!
→Keith

Dear Bruce,
Radios do not dance.
from Jean

To: Bruce Degen
ARTIST
c/o Scholastic Inc.

Dear Arnold,
On your trip, the hurricane reached land. But most hurricanes go far out to sea and do not hurt people and property.
Your friend,
Al, the weather scientist

A fishing boat probably would not survive if it were out in a very strong hurricane.
From the Coast Guard

Dear Bruce,
If Arnold really fell from a great height into the ocean, he would need medical attention!
From your Doctor

Dear Joanna,
The things that happen on Ms. Frizzle's trips are much too risky for children. Please keep them home next time. Your Mother

MSB CENTRAL

MAIL

MOONLIGHT IN BURBANK

MSB

Winter in Connecticut

Dear Ms. Frizzle,
We think the whole class should enroll in Phoebe's old school.
—The students at the Better-Safe-Than-Sorry School

To all readers:
Some of the things that happen in this book are make-believe. But of course, all the Science is real!
Joanna & Bruce

BE READY
FOR
ANYTHING
LOOP-
DE-LOOP

Gene Russo

Hurricane Joanna traveled through the western Pacific in August 1968, and lasted for eight days. The real Joanna, author JOANNA COLE, lives in the northeastern United States. Ms. Cole is the recipient of the *Washington Post*/Children's Book Guild Nonfiction Award for the body of her work and the David McCord Literature Citation for her significant contribution to excellence in the field of children's books.

There has yet to be a Hurricane Bruce. However, illustrator BRUCE DEGEN captures the energy, intensity, and beauty of this unique weather system in intricately designed paintings that have become the signature of the Magic School Bus books. Mr. Degen has illustrated many, many books for children, including the popular Jesse Bear series and *Jamberry*, which he wrote and illustrated. He lives in Connecticut with his family.

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American Bookseller Pick of the Lists

The Magic School Bus on the Ocean Floor
American Bookseller Pick of the Lists

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American Bookseller Pick of the Lists

"... the freshest, most amusing approach to science for children!"
— *The New York Times Book Review*

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